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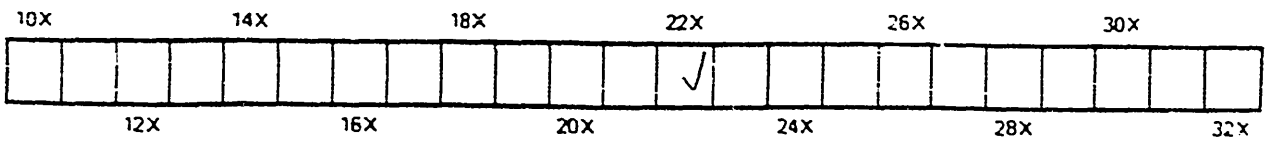

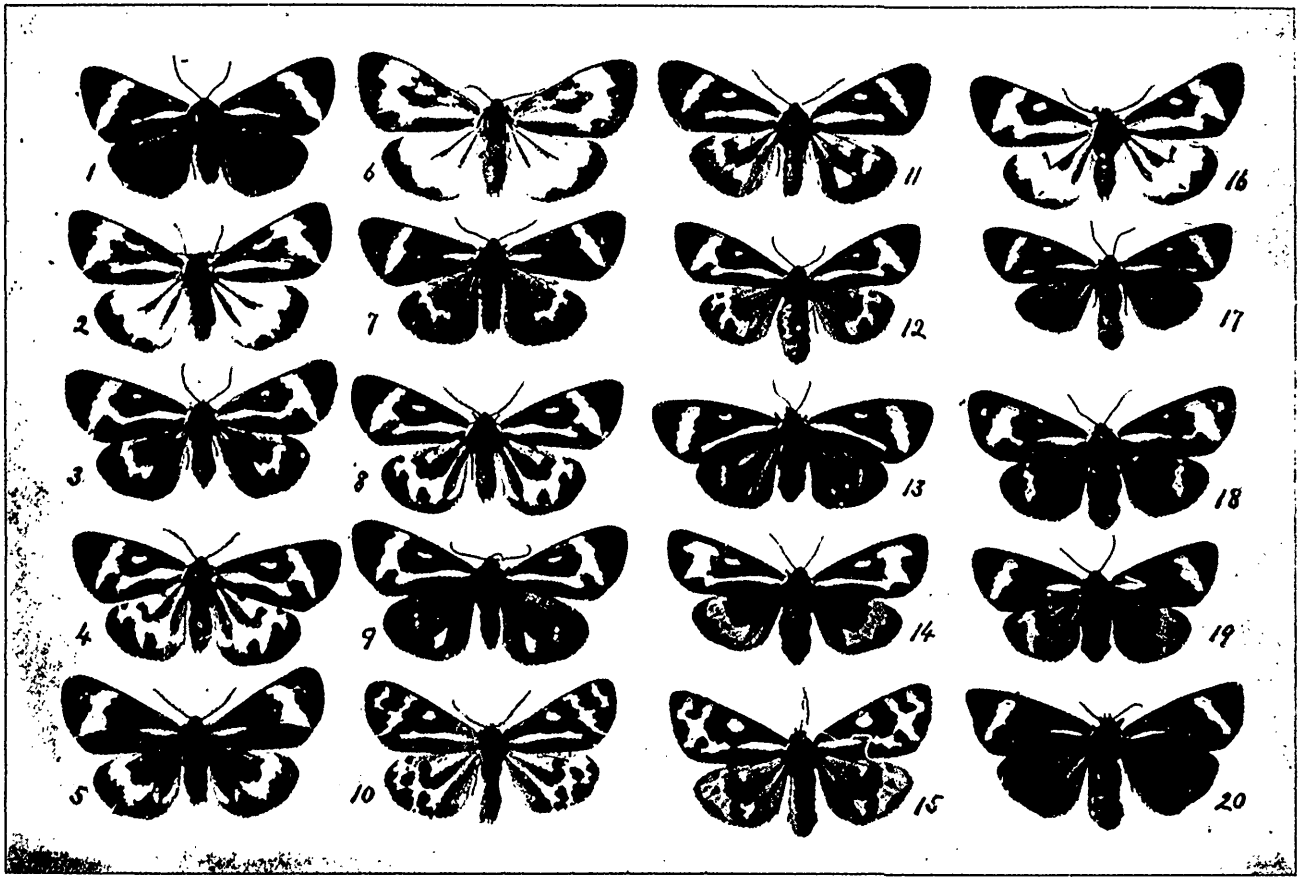

Nemophila petrosa, Walk. and varieties.
Plusiogaster, 1.

The Canadian Entomologist.

VOL. XXVII. LONDON, MAY, 1895. No. 5.

THE COLEOPTERA OF CANADA.

BY H. F. WICKHAM, IOWA CITY, IOWA.

IX. The Dytiscidæ (Colymbetini) of Ontario and Quebec.

The Colymbetini, which follow the Hydroporini in Dr. Leconte's scheme, are immediately distinguished therefrom by the distinctly five-jointed tarsi, and also, as a rule, by the much greater size. The males have the anterior, or middle tarsi, variously modified, but not forming regularly rounded disks as in the following group. Using the characters developed by the writers, whose works have already been mentioned, we may divide the Canadian genera thus :—

A. Semimembranous side pieces of first dorsal segment smooth.
  b. Hind tarsi with unequal claws.
    Black or metallic above..... *Ilybius.*
    Ferruginous above..... *Matus.*
  bb. Hind tarsi with claws equal or nearly so.
    c. Last joint of palpi emarginate..... *Coptotomus.*
    cc. Last joint of palpi normal.
      d. Elytra deeply 10-striate..... *Copelatus.*
      dd. Elytra not regularly striate.
        e. Prothorax not margined; elytra with numerous very short minute longitudinal striæ.... *Agabetes.*
        ee. Prothorax margined at sides.
          Wing of metasternum linear, strongly curved..... *Ilybiosoma.*
          Wing of metasternum wedge-shaped..... *Agabus.*

AA. Semimembranous side pieces of first dorsal rugose. Species usually large.
  Elytra reticulate..... *Scutopterus.*
  Elytra smooth or with short coarse lines; metasternum with deep groove..... *Rhantus.*
  Elytra transversely strigose; metasternum with feeble groove..... *Colymbetes.*

The character mentioned above for the primary separation of the groups of genera, the sculpture of the first dorsal segment, may need some explanation. The rugosities referred to under group AA. are to be seen near the first spiracle, and to be appreciated the elytron must be raised. However, it will seldom be necessary to refer to this, if a little experience, or a few named specimens, are in the possession of the student, since the groups separate easily by their facies.

ILYBIUS, Er.

The following scheme gives, in tabular form, the difference between the Canadian species as defined by Dr. Sharp. Lacking two of them, I am unable to verify the characters :—

A. Hind tarsi of males with the joints margined at the external lower edge.
  b. Last ventral of ♂ not carinate, the apical portion with coarse longitudinal striæ (.46 in.).....*subæneus*, Er.
  bb. Last ventral of ♂ with distinct median apical carina.
    Outer claw of anterior tarsi emarginate near the base in the ♂; legs piceous (.45 in.).....*4-maculatus*, Aubé.
    Outer claw of anterior ♂ tarsi simple; legs rufous (.38 in.).....*angustior*, Gyll.
AA. Hind tarsi of ♂ not margined at the lower external edge; last ventral with rather short carina, hind margin obscurely rugose; anterior feet rufous, posterior piceous (.40 in.)..*biguttatus*, Germ.

The considerable longitudinal convexity of the species of Ilybius, with their finely reticulate sculpture, renders them easily distinguishable from the neighbouring genera. In colour all are black above, more or less metallic, the elytra with two small pale lateral spots, one of which is sub-apical. *I. viridiæneus*, Cr., does not appear in the above table, since Dr. Sharp has placed it in synonymy with *I. subæneus*, Er.

COPTOTOMUS, Say.

C. interrogatus, Fabr., represents this genus. It is of ovate, subconvex form, about .28 in. long, head red with black vertex, thorax reddish, black at base and apex. The elytra are brownish with pale irrorations, a short vitta near the scutellum, and the external margin irregularly yellow. The under side and legs are reddish.

ILYBIOSOMA, Crotch.

A black beetle about the length of the preceding is *I. bifarius*, Kirby. The thorax is short with rounded sides, rufescent in colour, and with broad margin. The elytra are covered with little striolæ, which, in

general, are longitudinal in direction, but behind the middle slope somewhat towards the suture. The front of the head and the legs are red.

COPELATUS, Er.

Here belongs *C. glyphicus*, Say, which is peculiar on account of the distinct elytral striæ. Colour rufo-piceous, legs paler. Length, .19 to .24 in.

MATUS, Aubé.

Elongate, brownish-red, thorax rounded at the sides, anterior angles acute. Length, .32 in. Easily recognized by the elongate form and peculiar colour. Our species is *M. bicarinatus*, Say.

AGABETES, Crotch.

Oblong-oval, black, beneath reddish. Thorax very short, sides rounded, lateral margin reddish; elytra with reddish humeri, the surface covered with minute short scratches. Length, .27 in. *A. acuductus*, Harr.

AGABUS, Leach.

The species of Agabus are very numerous, and, from their extreme similarity in some parts of the series, difficult to separate. While none of them are very large, most of them are above a quarter of an inch in length; the colour is usually blackish, often more or less metallic, rarely variegate. They may often be found under stones in wet grassy places, or around the roots of plants in marshes and shallow pools; the swimming legs are usually rather feebly developed.

It has been deemed unwise to attempt a synoptic table, several of the Canadian species not being at hand for study. We have, therefore, been content to follow in the main the arrangement of Mr. Crotch, with the addition of such species as have been described since the publication of his paper, and such changes of nomenclature as seem necessary to bring it into correspondence with recent researches. The groups are based on the form of the male claws, the females offering too few characters of value to enable them to be identified in many cases without the corresponding males. This latter sex has the anterior tarsi more or less swollen, the joints beneath being clothed with hairs usually tipped with minute disks.

Group I. Anterior external claw in the ♂ very elongate, broadly dilated, internal one elongate and sinuate.

A. erythropterus, Say. Oval, convex, black, opaque; legs, margins of ventral segments and elytra yellowish brown, the sides and humeral angles paler. Surface of elytra closely reticulate, dorsal punctures obsolete. .37 in.

Group II. Anterior external claw acutely dentate in the ♂.

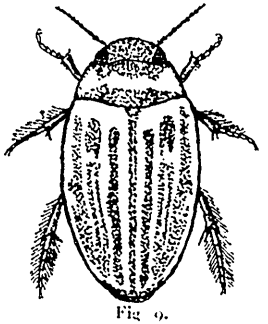
Fig. 9.

A. disintegratus, Cr. (Fig. 9). Reddish, thorax blackish before and behind, elytra with narrow blackish vittæ, metasternum black. .30 in. Easily recognized by its colour.

A. tæniolatus, Harr. Resembles the preceding, but is a little larger and broader, the metasternum not black, the first joint of the middle tarsi in the ♂ considerably exceeding the larger of the tibial spurs in length.

A. stridulator, Sharp. Oblong-oval, black, polished, not reticulate above ; antennæ and feet rufous, femora picescent .24 in.

A. semivittatus, Lec. Rather broadly ovate, black, shining, sides of thorax nearly straight, elytra finely and obsoletely punctulate, dorsal series of punctures rather deeply impressed, irregular, confused towards the apex. A submarginal yellow vitta is found in the apical third, the hind tibiæ are punctate at base. .35 in.

A. semipunctatus, Kirby. Ovate, convex, shining, black, sides of body rather parallel. Elytra very finely reticulate, dorsal series of punctures well marked, additional ones in the intervals. Hind tibiæ smooth. .24 in.

Group III. Anterior claws elongate, sinuate, compressed, or obtusely dentate in the males.

A. Erichsoni, Har. Oblong-oval, very convex, black, æneseent above, elytra obscurely ferruginous at the sides, densely and conspicuously reticulate. Antennæ rufous, feet piceous. Posterior angles of thorax obtuse. .40 in.

A. scriatus, Say. Ovate, sub-convex, black, above bronzed, legs rufescent. Elytra with fine reticulations, shining, hind angles of thorax rectangular. .40 in.

A. parallelus, Lec. Much like *scriatus*, but is said to differ in the more elongate parallel form and black legs. .42 in.

A infuscatus, Aubé. Ovate, brassy-black, mouth, legs, sides of thorax, margins of elytra and ventral segments yellowish-brown, the femora infuscate. Thorax with the surface coarsely rugulose and reticulate, elytra very finely reticulate. .30 in.

A. anthracinus, Mann. Ovate, convex, black, slightly bronzed

above, antennæ, legs and humeral region of elytra pitchy-red, anterior thoracic angles rufescent. Elytra rather coarsely reticulate with unequal areolæ, dorsal series of punctures obsolete. .30 in.

A. subfuscatus, Sharp. Oval, highly polished, black, prothorax somewhat ænescent, elytra fuscous, base and sides vaguely testaceous, antennæ and feet rufo-testaceous. Elytra sparsely finely punctulate, not reticulate. .30 in.

A. confinis, Gyll. Oblong-oval, polished, nearly smooth, black, elytra blackish, with rufescent sides, antennæ and feet rufous, the femora more or less piceous. Elytra hardly visibly punctulate, the dorsal series irregular. .38 in.

Group IV. Anterior claws of males simple.

A. obtusatus, Say. Ovate, rather convex, black, shining, sides of thorax rounded, more so in the ♂. Elytra with distinct dorsal series confused behind, areolæ rather large; subapical and sublateral vittæ yellow. .30–.32 in.

A. stagninus, Say. Broadly ovate, less convex, black, slightly bronzed, shining, legs paler. Sides of thorax little rounded, strongly margined. Elytra very finely reticulate, with submarginal yellow vitta on apical half. .40 in.

A. punctulatus, Aubé. Black, shining, regularly ovate, antennæ, legs and elytra ferruginous, disk darker. Thorax brassy, sides rufescent, finely margined and nearly straight, the surface irregularly reticulate; elytra finely punctulate, hardly visibly alutaceous, dorsal series rather obsolete, but not irregular. .25 in.

A. reticulatus, Kirby. Ovate, black, legs ferruginous, elytra griseous, with margins and epipleuræ yellowish; thorax fulvous, anterior and posterior margins black, head rufous in front. Elytra with irregular areolæ, giving a somewhat scabrous effect. .30 in.

A. gagates, Aubé. Ovate, convex, shining, piceo-rufous, bronzed above. Head in front and anterior angles of thorax red, sides of thorax slightly rounded, rather strongly margined; elytra finely and closely reticulate, appearing punctulate towards the apex, dorsal series well marked. .38 in.

A. tristis, Aubé. Elongate-oval, rather narrowed behind, tolerably shining, pitchy-black; thorax with anterior angles broadly fulvous, sides slightly rounded, rather strongly margined and sinuate. Elytra rather evidently coarsely reticulate, areolæ small, dorsal series tolerably distinct

with numerous punctures. .40 in. A variety occurs in California in which the thorax is entirely black.

SCUTOPTERUS, Esch.

Two species are recorded from Canada, neither of which are known to us in nature. They are, according to Dr. Sharp, different in shape from the other Colymbetini proper, and remind us somewhat of large *Agabi*. The surface sculpture consists of fine reticulations, resembling that of *A. tristis*. They are thus separated, the measurements being those of Dr. Sharp :—

Shining black, serial punctures distinct behind. .64 in ..... *Hornii*, Cr.
Less shining, piceous black, serial punctures indistinct behind.
.64 in..... ..... *angustus*, Lec.

RHANTUS, Esch.

The species of this genus are often yellowish above, with black irrorations on the elytra, and often darker spots on the head and thorax. They are a little less than half an inch in length, and may be separated on the following characters :—

A. Base of prothorax profoundly bisinuate, the hind angles prolonged, acute, black ; legs, antennæ, sides of thorax and elytral epipleuræ rufo-piceous. .40 in..... *sinuatus*, Lec.

AA. Posterior angles of thorax not prolonged.

b. Body beneath mainly black, more or less variegate with fulvous. Thorax with two median black spots, head black, front fulvous, elytra and legs fulvous, the former thickly irrorated with black (.47 in.)..... *binotatus*, Harr.
Thorax yellow, front and hind margins black ; head black, front and vertex fulvous, prosternum and four anterior legs pale (.40 in.)..... *bistriatus*, Bergstr.

bb. Body beneath pale (.41 in.)..... *tostus*, Lec.

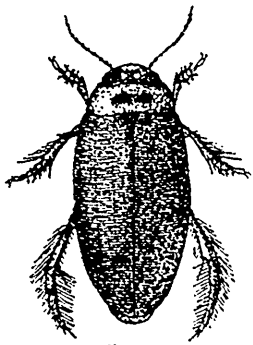

Fig. 10.

COLYMBETES, Clairv.

Rather large, elongate beetles, with transversely striate elytra.

A. Legs black.

Elytra with sides and basal margin pale. Sides of thorax fulvous (.64–.70 in.) ..... *longulus*, Lec.
Elytra with basal margins and humeral angles pale, thorax fulvous, with transverse black median bar. (.74 in.) *seminiger*, Lec.

AA. Legs pale (.63 in.), (Fig. 10). *sculptilis*, Harr.

LIST OF BUTTERFLIES TAKEN AT WINNIPEG, MAN., 1894.

BY A. W. HANHAM.

Danais archippus, Fabr , June 2nd to 17th, July 8th to August 8th.
Argynnis cybele, Fabr., July 7th to August 8th.
" *myrina*, Cram. Rare. Single specimens taken on July 14th and August 4th and 8th.
" *bellona*, Fabr., May 24th to June 2nd, July 15th to August 8th.
Phyciodes nycteis, Db.-Hew. Rare. June 17th to 24th.
" *tharos*, Dru., June 10th to August 14th.
Grapta interrogationis, Fabr. Both forms bred, July 15th to July 22nd, *fabricii*, Edw. } *umbrosa*, Lint. } from full grown larvæ off wild hop vine in my garden.
" *comma*, Harr., July 7th and 23rd, August 7th.
" *progne*, Cram., June 6th, July 14th, and August 2nd.
" *j-album*, Bd.-Lec. Rare. April 26th and August 14th.
Vanessa antiopa, Linn., April 28th. July 8th to August 19th.
" *milberti*, Gdt., April 21st, August.
Pyrameis atalanta, Linn., July 8th to August 19th.
" *huntera*, Fabr., July 14th to August 19th.
" *cardui*, Linn, July 26th and August 5th.
(None of these species of *Pyrameis* were abundant.)
Limenitis arthemis, Dru., middle to end of June.
" *disippus*, Gdt., end of June and early in August.
Debis portlandia, Fabr., June 17th to July 22nd.
Neonympha canthus, Bd.-Lec., July 14th (one specimen).
Cœnonympha inornata, Edw., June 17th to 24th.
Satyrus nephele, Kirby. Plentiful. July 8th to August 18th.
Thecla, sp. Several examples seen May 20th.
" *calanus*, Hbn., July 15th (one specimen).
" *strigosa*, Harr. (form *Liparops*, Bdv.) Rare. July 8th and 15th.
" *acadica*, Edw., July 14th and August 8th. (Single examples.)
Chrysophanus thoe, Bd.-Lec. Rare. July 12th to 22nd.
" *helloides*, Bdv., June 10th to 24th, July 22nd to August 3rd. The commonest butterfly here this season; especially abundant within the city limits.
Lycæna sæpiolus, Bdv. Local. A stronger flyer than other Blues occurring here. June 17th to 24th.
" *afra*, Edw. Plentiful. May 24th to end of June.

Lycæna melissa, Edw. Rare. August 3rd to 8th. (No ♀ seen.)
" *pseudargiolus*, Bd.-Lec.
lucia, Kirby, May 20th to June 3rd.
violacea, Edw. / *neglecta*, Edw. } June 2nd to June 17th.
" *amyntula*, Bdv. Abundant. May 24th to June 21st.
Pieris oleracea, Harr. Rare. June 3rd.
" *rapæ*, Linn., May 11th to September 3rd.
Colias eurytheme, Bdv., June 21st to 24th, July 14th to August 14th.
" *philodice*, Gdt., May 27th, July 8th to September 3rd.
" *interior*, Scud. One specimen taken by Mr. Lewis towards the end of June.
A white *Colias* seen and chased on June 24th.
Papilio turnus, Linn., June 2nd to 17th.
" *asterias*, Fabr. Examples taken July 15th and August 9th.
What appeared to be a black *Papilio* was seen on the wing in town on May 20th.
Ancyloxypha numitor, Fabr., June 24th. (One.)
Thymelicus garita, Reak., June 17th and 24th. Single examples.
Pamphila hobomok, Harr., June 2nd to 21st.
" *manitoba*, Scud. Local. August 3rd to 19th. (No ♀ captured.)
" *peckius*, Kirby. Middle of July to August.
" *mystic*, Scud., June 21st to end of month.
" *cernes*, Bd.-Lec., July 15th to August 4th.
" *metacomet*, Harr. Rare. Middle of July.
Amblyscirtes samoset, Scud., June 16th (one). On June 3rd an *Amblyscirtes* was missed; it may, however, have been this species.
Pyrgus tessellata, Scud. Mr. Lewis gave me a specimen of this insect taken early in July.
Nisoniades brizo, Bd.-Lec., May 25th to June 10th.
" *icelus*, Lint., June 2nd and 6th.
" *lucilius*, Lint., a worn specimen on August 14th.
" *juvenalis*, Fabr., May 25th to June 10th.
Eudamus pylades, Scud., May 25th to June 10th.
" *tityrus*, Fabr. Rare. July 8th (one).

A number of these species were new to me, and were kindly identified by Mr. James Fletcher, of Ottawa, to whom my thanks are due.

NEW TACHINIDÆ WITH A SLENDER PROBOSCIS.

BY D. W. COQUILLETT, WASHINGTON, D. C.

The Tachinidæ described below have a slender, rigid proboscis, of which the portion beyond the basal articulation is at least one half longer than the height of the head. All are from the Pacific Coast, and, except where otherwise stated, were captured or bred by the writer.

Siphona plusiæ, n. sp ♂ ♀ Terminal section of proboscis—the part beyond the second geniculation—not more than three-fourths as long as height of head. Frontal vitta yellow, less than twice as wide as either side of the front next the antennæ; sides of front grayish pollinose, frontal bristles descending nearly to apex of second antennal joint, two pairs of orbital bristles; face whitish, the sides bare; vibrissæ inserted near the oral margin, only two or three small bristles above each; cheeks less than one-fourth as wide as height of eyes. Antennæ black, four-fifths as long as the face, the third joint three times as long as the second, two and one-half times as long as wide; arista thickened on the basal half, the penultimate joint twice as long as wide. Proboscis brown, palpi yellow. Thorax and scutellum black, gray, pollinose, the former bearing three post-sutural macrochaetæ, the scutellum with a small, cruciate apical and three long lateral pairs. Abdomen black, the sides of the first segment broadly, and sometimes also of the second, except the hind corners, yellow; gray pollinose, more or less of the hind margins of the segments shining; a marginal pair and a single lateral macrochaeta on the second segment, a marginal row of six on the third and of four on the fourth. Legs yellow, the tarsi and usually the front femora and apices of the others, blackish; claws and pulvilli very small. Wings hyaline, third vein bristly at least half way to the small cross-vein, the others bare; hind cross-vein straight, perpendicular; calypteres white. Length, 3 to 4.5 mm. Southern California. Thirty-one specimens. Of these, sixteen were bred from larvæ of *Plusia californica*, April 26th, 1883, and July 2nd, 1892; four others were bred from an unknown Noctuid larva July 31st, 1890: the remainder were captured in February and March.

Isoglossa, n. gen.—Proboscis slender, rigid, the portion beyond the basal articulation nearly twice as long as height of head, labella not differentiated; palpi clavate, well developed. Eyes thinly pilose. Head not inflated, nearly quadrangular, broader than the thorax; face slightly receding, lower margin of head straight, slightly longer than length of head at base of antennæ, anterior pair of ocellar bristles directed obliquely

outward, frontal bristles in a single row, three beneath base of antennæ. Facial ridges strongly diverging from their upper nearly to their lower ends, then strongly converging, but their lower ends widely separated, the ridges bristly on slightly more than the lower half; sides of face bare, each one-fifth as wide as the central fovea, the latter destitute of a median carina; vibrissæ rather short, inserted near the oral margin. Antennæ inserted considerably above the middle of the eyes, nearly as long as the face, the third joint five times as long as the second, rounded at the tip; arista bare, not longer than the third antennal joint, thickened on the basal four-fifths, the penultimate joint nearly one-half as long as the last one. Cheeks over one-third as wide as height of eyes, wholly pilose. Scutellum bearing a small, cruciate, apical pair of macrochaetæ and two long lateral pairs. Abdomen elongate oval, slightly narrower than the thorax, the four segments subequal in length, destitute of a ventral process; macrochaetæ discal and marginal. Hind tibiæ not ciliate, claws and pulvilli nearly as long as the last tarsal joint. Apical cell open, ending the length of the small cross-vein before the tip of the wing, hind cross-vein slightly oblique, near the last third of the distance between the small cross-vein and the bend, the latter obtuse-angular, destitute of an appendix; third vein bearing two or three bristles at the base, the others bare; penultimate section of fifth vein nearly five times as long as the last section. (Name from the Greek: *isos* equal and *glossa* tongue.) Type, the following species.

Isoglossa hastata, n. sp.— ♂ Frontal vitta brown, gray pollinose, subequal in width to either side of the front next the antennæ; front and face light gray pollinose, a blackish spot each side between them; antennæ, arista and proboscis black, the palpi yellow. Thorax and scutellum black, gray pollinose, the former with four black vittæ and three post-sutural macrochaetæ. Abdomen black, opaque gray pollinose, the sides of the last three segments broadly orange-yellow, the two spots meeting on the hind end of the last segment; genitalia black, protruding one-fifth the length of the last segment beyond the latter. Legs black. Wings hyaline, calypteres white. Length, 6 mm. Southern California. A single specimen in April.

Drepanoglossa occidentalis, n. sp — ♀ Arista thickened on the basal fourth, proboscis beyond the basal articulation one-half longer than height of head. Frontal vitta brownish-yellow, three-fourths as wide as either side of front next the antennæ, sides of front and face whitish pollinose;

frontal bristles descending nearly to tip of second joint of antennæ, two pairs of orbital bristles; sides of face bare; vibrissæ inserted some distance above the oral margin, only two or three small bristles above each; cheeks over one-third as wide as height of eyes. Antennæ four-fifths as long as the face, yellow, the third joint black, two and one-half times as long as the second, nearly four times as long as broad; penultimate joint of arista not longer than broad. Proboscis and palpi yellow, labella black. Thorax black, grayish pollinose, marked with four black vittæ, the outer ones broadly interrupted; three post-sutural macrochaetæ. Scutellum yellowish, bearing a small apical and two long lateral pairs of macrochaetæ. Abdomen yellow, a black dorsal vitta on the last three segments, most expanded on the third; a marginal pair and a single lateral macrochaeta on the second segment, and a marginal row of six on each of the two following. Legs, including the coxæ, yellow, the tarsi black; claws and pulvilli less than one-half as long as the last tarsal joint. Wings hyaline, no costal spine, third vein bearing two bristles at the base, the others bare; apical cell open slightly before the tip of the wing, hind cross-vein sinuate and very oblique, at last third of distance between the small cross-vein and the bend, the latter arcuate; calypteres whitish. Length, 8 mm. Southern California. A single specimen in July.

Drepanoglossa venatoris, n. sp.— ♀ Differs from the above description of *occidentalis* only as follows: Frontal vitta scarcely more than one-half as wide as either side of the front, cheeks over one-half as wide as height of eyes. Third joint of antennæ twice as long as the second, only twice as long as wide. Proboscis black. Scutellum, bearing an additional lateral pair of macrochaetæ. Abdomen black on last two segments, yellowish-gray pollinose, third segment with a marginal row of ten, the fourth with a discal row of ten and a marginal row of eight macrochaetæ. Claws and pulvilli nearly as long as the last tarsal joint. Third vein bristly half way to the small cross-vein, costal spine distinct, fourth vein obtuse-angular at the bend, hind cross-vein straight. Length, 9 mm. Washington. A single specimen from Prof. O. B. Johnson.

Siphophyto setiger, n. sp.— ♂ Second segment of abdomen bearing a marginal pair of macrochaetæ. Frontal vitta yellowish-brown, subequal in width to either side of front next the antennæ, sides of front grayish pollinose, frontal bristles descending to base of third antennal joint, two pairs of orbital bristles; face whitish pollinose, the sides bare; vibrissæ inserted near the oral margin, only two or three small bristles above each;

cheeks over one-third as wide as height of eyes. Antennæ black, five-sixths as long as the face, the third joint five times as long as the second, five times as long as broad; arista thickened on the basal three-fourths, the penultimate joint over twice as long as broad. Proboscis black, the part beyond the basal articulation one-half longer than height of head, slender, the labella scarcely thicker; palpi yellow. Thorax and scutellum black, grayish pollinose, the former bearing three post-sutural macrochaetæ, scutellum with two long pairs. Abdomen black, subshining, base of each segment excepting the first narrowly gray pollinose; second segment with a marginal pair and a single lateral macrochaeta, the following each with a marginal row of six. Legs black, claws and pulvilli very small. Wings hyaline, base of third vein bristly, the others bare; apical cell closed slightly before the margin near the tip of the wing, hind cross-vein straight, perpendicular, slightly nearer to the small cross-vein than to the bend, the latter arcuate; calypteres whitish. Length, 4 mm. Southern California. A single specimen in February.

Siphophyto opacus, n. sp.— ♀ Differs from the above description of *setiger* only as follows: Second segment of abdomen destitute of a marginal pair of macrochaetæ. Third joint of antennæ four times as long as broad, penultimate joint of arista only one-half longer than broad. Abdomen, except the first segment, wholly opaque gray pollinose, first and second segments each with a lateral macrochaeta, the third with a marginal row of six, the fourth with a similar row of eight. Length, 5 mm. Southern California. A single specimen in April.

NOTES ON THE THYATIRIDÆ.

BY HARRISON G. DYAR, A. M., NEW YORK.

In describing the larval characters of this family (Proceedings of the Boston Society of Natural History, 1894, p. 399), I followed the arrangement of generic terms in Smith's list; but I believe that it can be improved. So I would arrange the genera of this neat little family as follows (following Hampson):—

Fore wing with a tuft of scales at internal angle.

Fore wing not elongated: outer margin rounded..... *Habrosyne.*

Fore wing elongated; outer margin subangulate ..... *Pseudothyatira.*

Fore wing without this tuft.

Fore wing with vein 6 arising from angle of cell or below.

Accessory cell reaching less than half way to apex..... *Thyatira.*

Veins 7 to 9 long-stalked (accessory cell long)..... *Euthyatira.*

Fore wing with vein 6 stalked; colour gray... ..... *Bombycia.*

Genus *Habrosyne*, Hübner.

H. scripta, Gosse.

Our single species is closely allied to the European *H. derasa*. Dr. Ottolengui has distinguished a climatic variety in his collection, which is of interest. The larva is known.

Genus *Pseudothyatira*, Grote.

Closely related to the preceding. The larva of one form is known, and closely resembles that of *Habrosyne*. As I have not seen the proof that the two forms classed here are but varieties, I would prefer to give them specific rank. I have seen no intergrades.

P. cymatophoroides, Grote.

P. expultrix, Grote.

Genus *Euthyatira*, Smith.

The larva of the only known species is widely different from that of the European *Thyatira batis*. Our larva is a concealed feeder, and without markings, while the European one possesses the structure of *Habrosyne*, but still further developed.

E. lorata, Grote.

E. pudens, Guenée.

E. semicircularis, Grote.

The structure of the veins excludes this last species from *Bombycia;* its markings do not differ essentially from those of *Euthyatira*, though the outer white patches are all lost, and the wings are rather broad.

Genus *Bombycia*, Hübner.

Mr. Hampson, in his Moths of India, refers *Bombycia* to the *Noctuidæ*, but this is the *Bombycia* of Stephens, not of Hübner (type *B. viminalis*, Fab.). According to Mr. Grote, the type of *Bombycia*, Hübn., is *B. or*, of Europe. We have two species, or possibly varieties, congeneric with this type.

B. improvisa, Hy. Edw.

B. tearlei, Hy. Edw.

The larvæ are unknown.

The two species numbered 1,467 and 1,469, in Smith's list, have been already removed from the family. Concerning No. 1,467, *magnifica*, Streck., Mr. Grote writes in the Entomologist's Record and Journal of Variation (Vol. VI., p. 80) :—"Examined by me in 1882, and determined then to be a Cossid." The reference of this species to Cossula by the late Mr. Neumoegen and myself was quite independent of Mr. Grote's observation, and it is interesting to have his positive determination thus corroborate ours, made solely from the description.

Bombycia candida, Smith, will require further examination before it can be accurately placed among the Thyatiridæ.

PRELIMINARY STUDIES IN SIPHONAPTERA.—IV.

BY CARL F. BAKER, FORT COLLINS, COLO.

Genus Pulex (Division II. continued.)*

TABLE OF SPECIES OF GROUP 2.

A. Abdominal segments each with three dorsal rows of bristles; whole insect very heavily spined and bristled; antennal groove in middle of head; bristles on joint 2 of antennæ longer than joint 3; maxillary palpi in female with joint 2 four-fifths of 4, and 3 two-thirds of 4; labial palpi reaching to one-third of anterior femora; pronotal comb of 20 spines; in anterior tarsi joint 3 two-thirds of 2 and shorter than 1, 5 twice 4 and less than 1 and 2 together; in middle tarsi joint 2 slightly shorter than 1 and longer than 5, 5 twice 4, and 1 long as 3 and 4 together; in posterior tarsi joint 1 long as 2 and 3 together, 5 one-half of 1 and much longer than 3, 2 about as long as 3 and 4 together, and less than 4 and 5 together; hind femora with a row of bristles on the side; leg spines long, apical spines on second joint of hind tarsi longer than joints 3 and 4 together; colour, light brown; length, 2–3 mm. . . *hirsutus*, n. sp.

AA. Abdominal segments each with one dorsal row of bristles; antennal groove in middle of head; maxillary palpi in female with joint 3 three-fourths of 4; labial palpi reaching to one-third of anterior femora; spines on legs medium; apical spines on joint 2 of hind tarsi longer than joints 3 and 4 together; in middle tarsi joint 5 longer than twice 4, 1 shorter than 3 and 4 together; hind femora with a row of bristles on side . . . . . *D.*

AAA. Abdominal segments each with two dorsal rows of bristles; in middle tarsi joint 1 equals 2; bristles on joint 2 of antennæ long as joint 3; spines on legs medium. . . . . *B.*

B. Apical spines on joint 2 of hind tarsi long as joints 3 and 4 together; antennal groove in middle of head; maxillary palpi in female with joint 2 three-fourths of 4, and 3 two-thirds of 4;

**P. penicilliger*, Grube, and *P. metallescens*, Kol., should have been mentioned as belonging to this division. The very insufficient descriptions render their location impossible. The former was described from various *Mustelidæ*, and the latter from *Xantharpyia ægyptiaca*. *P. echidnæ*, Denny, described from *Echidna hystrix* (Van Diemen's Land), should likewise have been mentioned in connection with Division I. These names doubtless represent good species, and it is to be hoped that collectors living within the range of these animals will take pains to obtain good series of the fleas infesting them.

labial palpi reaching to one-third of anterior femora; pronotal comb of 16 spines; in anterior tarsi joint 2 longer than 1 and one-third longer than 3; in middle tarsi joint 1 equals 3 and 4 together and shorter than 5, while 5 is twice 4; in posterior tarsi joint 1 equals 2 and 3 together, 5 a little longer than 3 and less than one-half of 1, while 2 is three times 4 and less than 4 and 5 together; hind femora with a row of bristles on side; colour, light reddish-brown, darker dorsally on abdomen; length, 2–2.5 mm..... .....*Bruneri*, n. sp.

BB. Apical spine on joint 2 of hind tarsi shorter than joint 3; pronotal comb of 18 spines; in anterior tarsi joint 1 little, if any, longer than 3..... .....*C.*

C. Antennal groove in anterior half of head; maxillary palpi in female with joint 2 little shorter than 4, 3 two-thirds of 4; labial palpi reaching to end of anterior trochanters; in anterior tarsi joint 5 shorter than 1 and 2 together, 1 and 2 nearly equal; in middle tarsi joint 5 equals twice 4, and about the same as 2, while 1 about equals 3 and 4 together; in posterior tarsi joint 5 shorter than 3 and 4 together, and one-half of 1, 2 is three times 4 and long as 4 and 5 together; colour, light brown, darker dorsally on abdomen; length, 2.5-3 mm. *sciurorum*.

CC. Antennal groove in posterior half of head; labial palpi reaching to one-third anterior femora; in anterior tarsi joint 2 long as 3 and 4 together, 1 twice 4; in middle tarsi joint 5 equals 3 and 4 together; in posterior tarsi joint 1 twice 2, 5 shorter than 1 and long as 3 and 4 together; colour, light reddish brown; length, 5 mm..... .....*melis.*

D. Apical spine on joint 1 of hind tarsi only half as long as joint 2; maxillary palpi in female with joint 2 longer than 4; bristles on joint 2 of antennæ shorter than joint 3; pronotal comb of 12 spines; in anterior tarsi joint 2 longer than 3 and about equal to 1, 5 twice 4 and shorter than 1 and 2 together; in middle tarsi joint 5 one-fourth longer than 2; in posterior tarsi joint 5 long as 3 and 4 together, and one-half of 1, 2 three times 4 and more than 4 and 5 together; colour, light brown; length, 2 mm.....*longispinus*, n. sp.

DD. Apical spine on joint 1 of hind tarsi nearly as long as joint 2; maxillary palpi in female with joint 2 shorter than 4; bristles

on joint 2 of antennæ longer than joint 3 ; pronotal comb of 16 spines; in anterior tarsi joint 1 equals 3 and is shorter than 2, 5 long as 1 and 2 together, and nearly three times 4 ; in middle tarsi joint 5 one-fifth longer than 2 ; in hind tarsi joint 5 less than 3 and 4 together, but more than one-half of 1, 2 twice 4, but less than 4 and 5 together; colour, light brown, darker dorsally on abdomen ; length, 2.25–2 5 mm... *montanus*, n. sp.

Pulex hirsutus, n. sp.

This flea, with its long and abundant spines and bristles, presents a very unusual appearance. It was collected on the Prairie Dog *(Cynomys ludovicianus)*, at Stove Prairie, Larimer Co., Colo., by Prof. C. P. Gillette.

Pulex Bruneri, n. sp.

I have received specimens of this species taken on *Spermophilus 13-lineatus* and *S. Franklini*, at Lincoln, Neb., by Prof. Lawrence Bruner, and others, taken on the first named host by Prof. Herbert Osborn. I have also taken specimens from the same host at Fort Collins.

Pulex sciurorum, Bouche.

1835. Bouche, Nov. Act. Acad. Leop., Carol., XVII., 1., p. 506.

I have specimens of this species from Dr. Taschenberg, taken on *Sciurus vulgaris* in Germany. It has also been recorded from *Rhinolophus ferrum-equinum*. I do not know that it occurs in North America.

Pulex melis, Walker.

1856. Walker, Insecta Britt. Diptera , III., p. 5.

This very large and long flea has been recorded from *Meles taxus* and *Canis vulpes*. I have seen no fleas from either badger or fox collected in North America.

Pulex longispinus, n. sp.

I have received specimens of this flea taken on Fremont's Chickaree at Georgetown, Colo., with *P. coloradensis*. It seems likely that there is an error in the data for either this species or *P. coloradensis*. It is not a usual occurrence for two species of fleas to be found living together on a single wild animal. These species are totally distinct.

Pulex montanus, n. sp.

My specimens of this flea were taken from the large Mountain Grey-Squirrel *(Sciurus Aberti ?)*, in the foothills west of Fort Collins, by Prof. J. D. Stannard.

[TO BE CONTINUED.]

OBITUARY.

The following particulars respecting our late correspondent have only recently been obtained :—

Oliver Jacob Staley, of Marshall, Saline Co., Mo., died July 6th, 1894 while on a collecting trip near home. His body was found by searching parties, in a creek, face downward. A sultry day induced him to bathe with fatal result. He was born in Princetown, Schenectady Co., N. Y., and removed with his parents to Marshall, Mo., thirteen years ago. He practiced law for about four years, and was in the twenty-fifth year of his age. A member of the Y. M. C. A., he was much respected by everybody. He published in the CANADIAN ENTOMOLOGIST, Vol. XXIV., p. 201, "A List of Butterflies found at Marshall, Missouri, and vicinity." During the last six years he had been actively collecting Lepidoptera.

R. E. KUNZE.

NOTE ON THE PLATYPTERYGIDÆ.

BY A. R. GROTE, A. M., BREMEN, GERMANY.

In the Proceedings of the American Philosophical Society for 1874 is published a list of certain family groups of Bombycine moths, and I retained there the term *Platypterices*, of Hubner, 1806, for the group to which now a distinct family value is given, and which should therefore bear the name *Platypterygidæ*. Already in 1868, Trans. Am. Ent. Soc., I had proposed the subfamily termination to the corrected original term of Stephens: *Platypterycidæ*. The question as to which of the two terms should be employed, *Drepanidæ* or *Platypterygidæ*, should, I think, be decided in favour of the latter form of the plural use of the name by Hubner and Stephens. Schrank's original genus *Drepana* is the first generic term used in the group. The genus is a mixed one. It contains: 1, *D. sicula;* 2, *D. falcula;* 3, *D. flexula* (not belonging here); 4, *D. hamula;* 5, *D. lacertula;* 6, *D. spinula*. Schrank's definition is "Sichelspinner." Laspeyres's restriction (1803) of the group under the name *Platypteryx* is the first to be made, and Hubner, in 1806, still further restricts Laspeyres's name to the single type *P. hamula*. To this structural type should the name *Platypteryx* be henceforth confined, and with this type our North American species, *arcuata, genicula* and *siculifer* appear to agree. From the description I have shown there is a probability that Stephens's *Drepana fasciata* was based upon one of our *Geometridæ* belonging to *Drepanodes*. So far, then, as our fauna is concerned, the

exact type of *Drepana* (one of the above six species of Schrank's) is not now in question. In 1868 I did not know the use of Laspeyres's term by Hubner in 1806, and following Stephens, incorrectly used *Drepana* for our species; but I changed this use in the paper above cited in 1874, reverting to the name *Platypteryx* used by me in my first paper on our species, Proc. Acad. Nat. Sci., Phil., 1862, p. 59.

ADDITIONS TO THE LIST OF U. S. HYMENOPTERA.

BY T. D. A. COCKERELL, NEW MEXICO AGR. EXP. STA.

(1.) *Smicra divisa*, Walker.—On July 8th, 1892, Prof. C. H. T. Townsend collected some specimens of a *Smicra* in the Grand Canon, Arizona; and on July 27th he obtained what is doubtless a ♂ of the same species, at the Zuni River, Arizona. These had remained in our collection unnamed, until Miss MacGilmore, a student in zoology, worked them over, and concluded they were probably Walker's *divisa*. I hardly agreed with this, rather thinking the insect was new, but Mr. Ashmead has now seen a specimen, and declares it is really *divisa*. The type locality of *S. divisa* is Orizaba, Mexico, and no other specimens than Walker's were known to Mr. Cameron when writing the Chalcididæ of Biol. Cent. Am. The Grand Canon specimens differ from Walker's short description in the scutellum having two yellow spots, not a yellow hind border. The teeth on the hind femora deserve some comment. Walker says: "One large and several small teeth." Cameron places the species in his section B.: "Femoral teeth small, minute, more than eight in number." Our insect has one large and six small teeth, and so could not be *divisa* if Cameron were correct; but the little that Walker says accords with our species, and would place it in Cameron's section A.

(2.) *Philanthus multimaculatus*, Cameron.—One on *Chilopsis* in Mr. Barker's garden, at Las Cruces, N. M., June 5th, 1894 A pretty and distinct species, easily recognized by Cameron's figure and description in the Biol. Cent. Amer. The type locality is Atoyac, in Vera Cruz, Mexico.

(3.) *Crabro centralis*, Cameron.—On *Solanum elæagnifolium* in open ground behind the Central Hotel, in Las Cruces, N. M., June 10th, 1894 (Ckll., 887). This was identified for me by Mr. Fox, and will be included in his forthcoming memoir on N. A. Crabronidæ. I mention it now only to call attention to the curious fact that it also originally came from Atoyac, in Vera Cruz, being, however, also found in Guatemala and Panama.

A NEW PULVINARIA FOUND ON ORCHIDS.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

Pulvinaria brassiæ, n. sp.

♀ scale rather like *Lecanium hesperidum*, elongate-oval, flattish, pale olive-brown, 2½ mm. long. Ovisac white, firm, elongate, parallel-sided, distinctly longitudinally grooved, 8 mm. long, 2 broad. Derm colourless, not tessellate. Margin with a double row of easily-deciduous, strong, usually large, blunt spines, which are, near the lateral and posterior clefts, more or less branched at their tips. Spines of lateral clefts in threes, one very long and large, two very short and small. Anal plates brown, longer than broad, their outer sides meeting at about a right angle. Each plate with three small spines at tip, and three large bristles on outer hind margin. Anogenital ring with six stout hairs. Rostral loop reaching to level of insertion of middle pair of legs. Antennæ 8-jointed; 3 longest, but not greatly so. Formula 32 (458) 167. Two and 5 each with a long hair; 8 with several long hairs. Legs ordinary; coxa more than half as long as trochanter + femur. Trochanter with a strong, but not *very* long, bristle. Claw short, stout, curved. Tarsal digitules long, moderately stout, distinctly knobbed. Digitules of claw extremely stout, gradually widening to the large knobs.

Hab.—On leaves of *Brassia verrucosa*, a native of Mexico, in greenhouse at Ottawa, Dec. 15th, 1894 (J. Fletcher). The actual plant was purchased from a New Jersey florist, and the insect has been found on no other in the house. It is quite a distinct and peculiar form of the type of *P. camelliæ*, but smaller, with a much narrower, ribbed ovisac. I regret that I have not seen the description of *P. linearis*, Targ., 1885, found on *Camellia japonica*, but it is doubtless safe to assume that it cannot be that species.

THE USE OF MEGALOPYGE.

BY A. R. GROTE, A. M., BREMEN, GERMANY.

In the able and original paper on "Evolution and Taxonomy," by my friend, Prof. Comstock, published in 1893, is a note, on page 103, relating to the use of the generic title *Megalopyge*. The author says, referring to Berg's (not "Berge") articles on Argentine Lepidoptera: "This monograph seems to have been overlooked by American writers." This seems not quite correct. In Papilio, Vol. 3, 106–8, I have published (1883) a review of these papers by C. Berg. I took, in the course of a lengthy

review, the ground that Hubner's genus *Megalopyge* was a mixed genus, being proposed for two species, *lanata* and *nuda*, and that there was no proof that these two species were congeneric. In the absence of such proof, it was not correct for Berg to designate *lanata* (and its structural allies) as either the type of or typical of *Megalopyge*. Under these circumstances, I preferred Harris's term *Lagoa* as a proper restriction of Hubner's genus for the type to which *pyxidifera*, *opercularis* and *crispata* belong. I did not know then, what seems to be the fact, that *Lagoa* was preoccupied and must be wholly rejected on this score. But then *Pimela*, Clem., 1860, for the same type must be considered as the next available term for a restriction of *Megalopyge*. The matter stands thus: If *lanata* and *nuda* are congeneric, then *Pimela* falls as a synonym of Hubner's genus. If these two are *not* congeneric, then Clemens's term must be used for *lanata* and our North American species, as the first restriction of Hubner's genus, and *Megalopyge* must be left to the type *nuda*, a species quite unknown to me. As to this and related matters, I think I can refer the student to the paper in "Papilio," above cited, in which I drew the attention of American Lepidopterists quite fully to Berg's valuable writings.

BOOK NOTICES.

"The Classification of the Lepidoptera," by Vernon L. Kellogg, American Naturalist, Vol. XXIX., pp. 248–257, plate XVII. (March, 1895).

Mr. Kellogg reviews Prof. Comstock's classification of the Lepidoptera especially in regard to the establishment of the sub-orders Jugatæ and Frenatæ (Evolution and Taxonomy), and shows how his own researches on the wing scales corroborate this division. He adds nothing essential to his former results in this direction (Kansas Univ. Quarterly, III., 45–89, 1894), and so far it appears that the wing scales do not afford a basis for the subdivision of the Frenatæ. The new part of the present article consists of a consideration of the mode of specialization of the meso- and meta-thoracic segments, as effected by a cephalization of the powers of flight. The Jugatæ are found to be in a generalized condition in this respect, but apparently not more so than certain Tineidæ; therefore, the result of this investigation is not a convincing support of Prof. Comstock's sub-orders, though it does show that the Hepialidæ belong low in the scale, as they are placed in Dr. Chapman's pupal classification. It is another argument against the old group of Bombyces.

HARRISON G. DYAR.

Notes on Butterfly Pupæ, with some remarks on the Phylogenesis of the Rhopalocera. By T. A. Chapman, M. D.

Readers of the Entomologist's Record (P. Heinsberger, 9 First Avenue, New York, Agent) will have been for some time interested in Dr. Chapman's writings. The description of the different "dresses" of the larvæ of *Arctiidæ* have shown us that the phylogeny of the different genera in this group can be studied to advantage by a systematic classification of larval characters. Each stage of the metamorphic Hexapod must be considered by itself and the larva (as we have seen from Mr. Dyar's writings) should be treated as an independent existence. The more so since the environment is peculiar and modification to meet its requirements is so abundantly displayed. In his present paper in the Record for March 15th, 1895, Dr. Chapman considers the butterfly pupa by itself. The author draws attention to the "progress which is evident in the pupæ of *Rhopalocera*, as in those of *Heterocera*, from a condition of greater to one of less freedom of the segments; to the progress from a greater number of exposed appendages (a decided 'Micro' character) to a less number, though this is not illustrated amongst butterflies except, perhaps, between Hesperids and Papilionids; and to a general progress towards a smoothly rounded, solid form, which, however, is greatly interfered with amongst the butterflies by the exigencies of the development of protective resemblance." From observation, Dr. Chapman concludes that movement is never regained by the pupa, when in course of time it has been lost through adaptation. Dr. Chapman also verifies the conclusions laid down by other students that similar structural characters have been reached along different lines by descendants from a common ancestor who did not present any indication of them.

In the course of a very remarkable *exposé* of pupal characters, Dr. Chapman takes occasion to speak very highly of Scudder's Butterflies of New England, while the author's observation of pupæ confirms Mr. Scudder's classification, not only broadly, but in considerable detail. The conclusion Dr. Chapman comes to with regard to *Papilio* is, that *Papilio* still closely represents the primeval butterfly when it had become truly a butterfly as distinguished from a Hesperid. The low rank of *Papilio* would now seem to be confirmed from the independent labours of Scudder, Comstock, Dyar, and Chapman. The genus has "fallen from its high estate," without altering the fact that the Swallow-tails are among

the most beautiful and graceful of butterflies, as well as the most interesting. As representing most nearly the primeval butterfly, *Papilio machaon*, for instance, may still be considered as typical of the group in a wide sense, no less than as typical of the particular family *Papilionidæ* to which it belongs.

Dr. Chapman's paper must be read and studied to be fully appreciated as it deserves. To draw attention to its merits, this brief notice is penned. It adds largely to the store of scientific facts; it is well and clearly written, and is the product of a mind which not only seizes small circumstances, but is able to build from them a theory of the way in which Nature has gone to work. A. R. GROTE, A. M.

"A Manual for the Study of Insects," by John Henry Comstock and Anna Botsford Comstock, Ithaca, N. Y. Comstock Publishing Co., 1895. (Price, $3.75.)

This is a work of 700 pages, profusely illustrated. A table of the classes of the Arthropoda is given, followed by a short characterization of the Crustacea. Thirty-three pages are devoted to the Arachnida, and a table is given for separating the principal families of the Araneida. The Myriapoda are briefly referred to, and Chapter III. begins the discussion of the true insects (Hexapoda). Nineteen orders are recognized, and a careful table is given for their practical determination.

In the remainder of the work, 618 pp., the several orders are treated, with tables carrying the student to the families, each illustrated by typical common species, of which brief accounts are given.

In the Lepidoptera, Diptera, and Hymenoptera, the uniform system of nomenclature of the wing-veins discussed by Prof. Comstock in "Evolution and Taxonomy" is applied throughout the orders. As stated in the preface, but slight changes are made from the usual classification of the families, except in the Lepidoptera, where the system proposed in "Evolution and Taxonomy" is adopted with slight changes. This is remarkably like Dr. T. A. Chapman's classification from pupal characters and the present writer's one on larval characters. All three agree on breaking up the old groups Zygænidæ and Bombyces, and the several members are referred to essentially the sames places. The work affords

for the first time a means for teacher as well as student to determine the family of any North American insect, for here synoptic tables replace the vague characterizations so generally in vogue in Zoology. To bring the tables down to species, as is done so satisfactorily in Botany, as the author remarks, would make the work of enormous length, not to mention the fact that the present state of our knowledge of insects does not warrant such an undertaking. The work seems a very valuable and timely one.

HARRISON G. DYAR.

[We wish to add to the foregoing notice our hearty congratulations to Professor Comstock and his talented wife upon the completion of their excellent work, and our tribute of praise for the thoroughly admirable manner in which they have performed it. It is now a little more than six years since we noticed in these pages the first part of this work, which consisted of 234 pages and 200 wood-cuts; we then stated that "judging from the portion before us, we have no hesitation in saying that the complete work will be a most valuable and admirable manual of Entomology; in clearness and simplicity of style, in excellence of illustration, and in arrangement of matter, it leaves nothing to be desired." This prediction has been most completely fulfilled, the volume before us being, in several respects, even an improvement upon the original publication. The new illustrations are more artistic, and the diagrams of wing-venation and details are clear and accurate; the synoptic tables will afford any painstaking student with satisfactory means of classifying into families any specimens that he collects, while the letter-press and figures will enable him to determine a large number of species. We heartily commend the work to all who are beginning to study Entomology, and we can assure others, who have made some progress in the science, that they will find in it a vast deal of help and information that will prove of the utmost value. We may add that the illustrations consist of 800 wood-cuts and six beautiful full-page plates, the one forming the frontispiece being coloured. The price of the work is so reasonable that it is within the reach of all.

C. J. S. B.]

CORRESPONDENCE.

BOMBYCIDÆ—ZYGÆNIDÆ.

In the April number of the CANADIAN ENTOMOLOGIST, Mr. Schaus states (p 94) that Bombyx has no frenulum. A glance at Prof. Comstock's figure (Evol. and Taxonomy, p. 88) shows it distinct, but very small, so that difference of opinion about it may readily be entertained. This illustrates again that this character is not an adequate one for family definition. Mr. Hampson himself has already abandoned it. (Ann. and Mag. Nat. Hist. (6) xiv., pp. 254–261.)

In the same number Mr. Grote refers frequently to the Zygænidæ (p. 95). Can we not adopt some other name for this objectional term? As long ago pointed out by Westwood, Zygæna is pre-occupied in Ichthyology. Moreover, the name is entirely vague, for we have had associated under it most diverse insects belonging respectively to the more specialized Microlepidoptera (my Anthrocerina) and the higher Arctian type of the Noctuina. According to Kirby the type of Zygæna is *phegea*. Linn., an Arctian, while Hampson follows the old custom, and makes the type *filipendulæ*, a micro. I have used the terms Euchromiidæ (Syntomidæ) for the former, Anthroceridæ for the latter.

Now, we have in North America no Zygænidæ (*sensu* Hampson), as pointed out by Prof. Smith; our Pyromorphidæ are the nearest approach to them. Mr. Grote apparently uses the term for the Euchromiidæ, and only continues the confusion; for this fails to bring out the fact, which I think must finally become fully apparent, that the old family Zygænidæ must be separated into elements belonging to fundamentally dissimilar groups of the Frenatæ. Can we not entirely abandon the term Zygænidæ?

HARRISON G. DYAR.

THE ROYAL SOCIETY OF CANADA.

The fourteenth annual meeting of the Royal Society of Canada will be held at Ottawa on the 15th, 16th and 17th of May, 1895. The Rev. T. W. Fyles, South Quebec, P. Q., has been appointed to represent the Entomological Society of Ontario at the meeting.

Mailed May 1st, 1895.